# Bruce (Shidi) Xi

303-4240 Cambie St, Vancouver, BC, V5Z 2Y4
(236)-777-8218 • brucexi99@outlook.com • bruce-shidi-xi
brucexi999

## Education

**The University of British Columbia** **Vancouver, BC**
*Master of Engineering in Electrical and Computer Engineering* *2021–2024*
- Research project: Multi-agent Deep Reinforcement Learning for VLSI Routing
- Relevant courses: Deep Learning, Computer Architecture, CNN Hardware Accelerator, Digital System Design

**Imperial College London** **London, UK**
*Bachelor of Engineering in Materials Science and Engineering* *2018–2021*
- Graduated with First-Class Honours
- Obtained Dean's List for three consecutive years (2018-2021)

## Project

**Multi-agent Deep Reinforcement Learning for VLSI Routing** **May-Oct. 2023**
- Demonstrated initiative by independently mastering DRL and VLSI global routing through exhaustive self-study and comprehensive literature review
- Successfully modeled and implemented the physical routing problem in Python
- Designed an innovative multi-agent DRL model to address the routing challenge, leveraging the sophisticated capabilities of Python libraries

**Embedded System Design** **Jan.-Apr. 2023**
- Designed key components of an embedded system including a 4-way set-associative cache controller and a DRAM controller using Verilog. The cache reduced the runtime of a benchmark by 43%
- Implemented the system on an FPGA with a provided soft microcontroller
- Developed software and firmware in C that interacted with hardware using SPI, IIC, and CAN protocol
- Utilized hardware timer interrupt and designed a snake game software that ran on the embedded system

**CPU Architecture Design** **June-Sept. 2022**
- Architected and crafted a 16-bit RISC CPU from the ground up using Verilog, integrating pivotal components such as FSM, datapath, RAM, and I/O interfaces
- The CPU supported 13 diverse instructions encompassing ALU operations, memory access, and branching mechanisms
- Successfully deployed the system onto an FPGA and validated the design's capabilities by executing a test program

## Experience

**Motorola Solutions** **Vancouver, BC**
*Design Validation Co-op* *May-Dec. 2022*
- Orchestrated a comprehensive range of camera tests, ensuring precision both in lab settings and office environments
- Developed Python-based software, realizing test automation and data analysis, resulting in a significant enhancement in test efficiency. Some tests achieved automation of up to 90%
- Collaborated effectively within a team framework, leveraging tools like Git and Jira for optimal workflow management

**University College London** **London, UK**
*Undergraduate Research Assistant* *June-Aug. 2021*
- Played an integral role in the research team by meticulously taking measurements and preparing samples
- Demonstrated analytical skills by independently evaluating vast datasets and presenting insights effectively to the research group, fostering informed decision-making

## Skills

**Hardware**: Verilog, FPGA, Assembly, Cadence

**Software**: Python, C, Linux, Git, Deep Learning, Reinforcement Learning

**Research**: LaTeX, Academic and Technical Writing, Mendeley